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MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow
Forecasts as of
March 1, 1984

MONTANA STATE
1515 E. 6th Avenue
HELENA, MONTANA 59620

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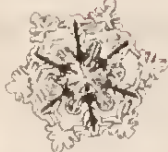
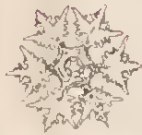
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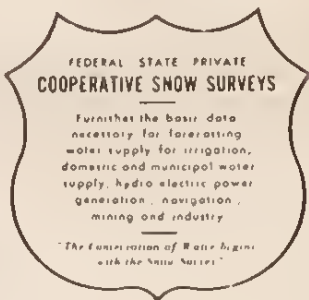
On the front page of the February 1 Water Supply Outlook for Montana, we asked for your help in identifying snow courses that you need for your operations.

If you missed the article or meant to respond but didn't, we can still incorporate your comments in the second phase of our study. Details are explained in the February 1 Outlook.



The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, Room 443, Federal Building, 10 East Babcock, Bozeman, Montana.



Drastic changes needed!

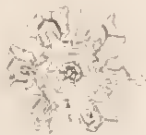
Small mountain ranges in central Montana showed some improvement in snowpack conditions but the rest of the State remained about the same or declined.

Most of the mountain headwaters have below to well below average accumulation of snow.

The area along the Continental Divide north of MacDonald Pass to Canada, has snow water content near record lows.

Over 80 percent of the snow accumulation season has passed. A drastic change in weather patterns will be required to show any major improvement in this year's snowpack. Usually the season's maximum accumulation of snow water levels occurs around mid-April.

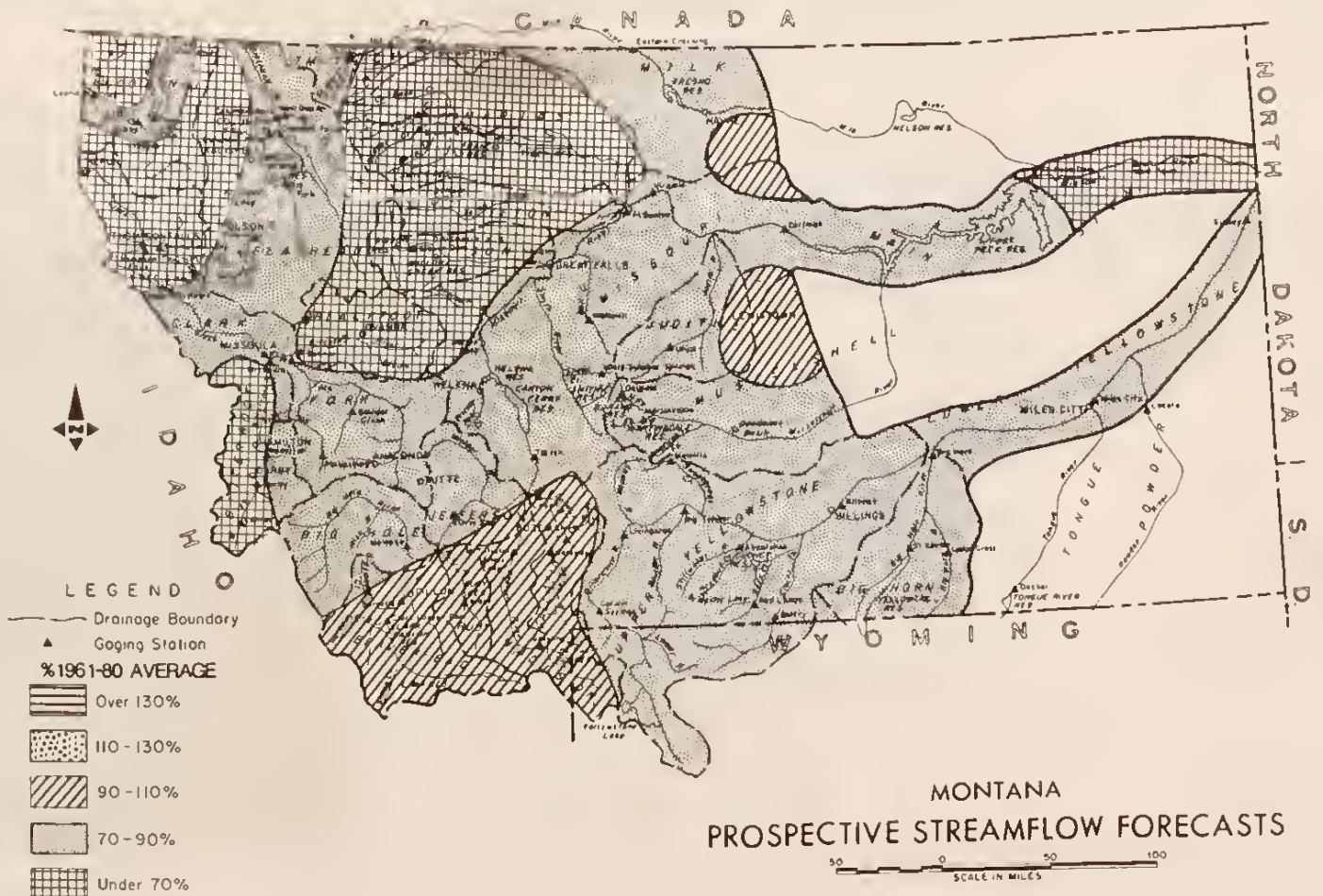
The normally heavy snowfall areas in northwest Montana would require 200 to 300 inches of snowfall during March in order to reach average water content levels by the first of April.



Irrigation water shortages anticipated

The southwest corner of the State and two areas in central Montana will have near average to a little below average runoff. All other areas are forecast to have below to well below average water supply this spring and summer.

Irrigation shortages could vary from moderate to severe in these areas depending on water rights, stored water and temperatures and precipitation during the next few months. Weather patterns have not been favorable for picking up moisture since December. If this pattern continues through this summer, extensive water shortages can be anticipated.



Missouri River & Hudson Bay Drainages

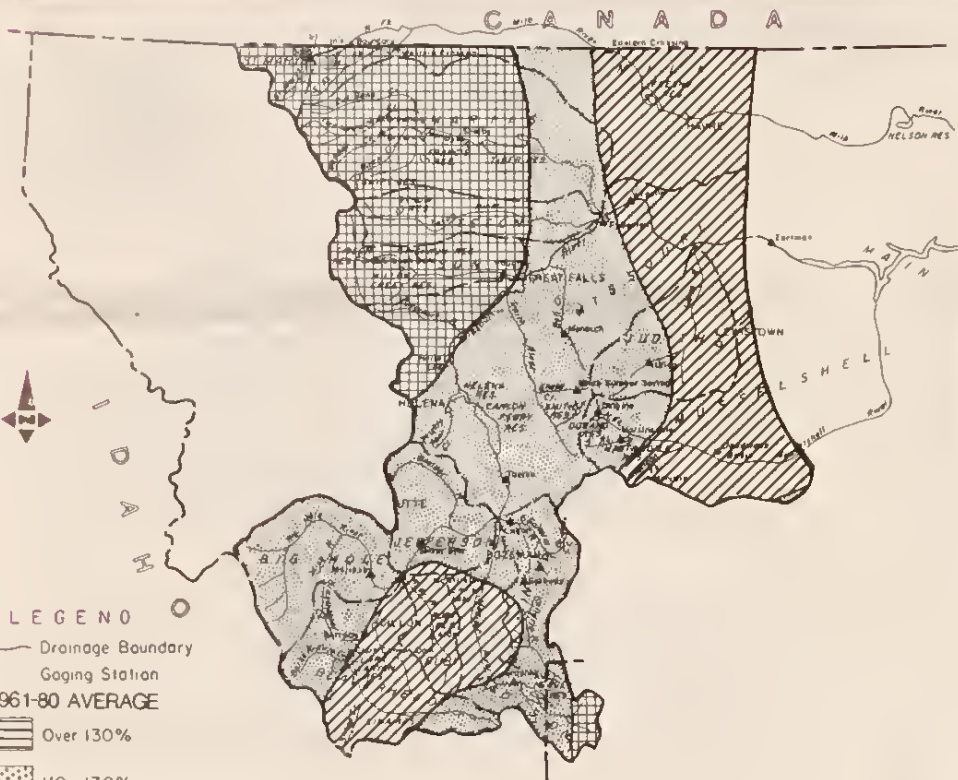
STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
RED ROCK RIVER near Monida (1)	102	99	186	103	96.0	100	159	96.3
BEAVERHEAD RIVER near Grant (2)	150	95	250	158	132	96	197	137
BEAVERHEAD RIVER at Barratts (2)	195	93		209	171	95		180
RUBY RIVER near Alder	105	104		101	90.0	106		84.6
BIG HOLE RIVER near Melrose	570	75		760	520	74		698
BOULDER RIVER near Boulder	Streamflow measurements			98.7	discontinued			87.8
WILLOW CREEK near Harrison	18.5	92		20.0	16.7	94		17.8
MADISON RIVER near Grayling (3)	454	92	532	496	357	92	408	388
MADISON RIVER near McAllister (4)	800	94	947	848	632	94	749	672
GALLATIN RIVER near Gateway	504	92	534	545	434	94	451	464
INFLOW MIDDLE CREEK RESERVOIR near Rozeman (5)	26.4	92	26.3	28.6	22.8	92	22.5	24.7
HYALITE CREEK near Rozeman (6)	40.5	90		44.8	35.4	91		38.7
GALLATIN RIVER at Logan	547	90		611	469	90		523
MISSOURI RIVER at Toston (7)	2137	84	2885	2,545	1841	84	2385	2,196
SHEEP CREEK near White Sulphur Springs	17.5	80	16.8	21.8	15.0	79	13.0	19.0
SUN RIVER at Gibson Dam (8)	295	52	349	570	260	50	304	522
BELT CREEK near Monarch	102	76		134	95.0	77		123
MISSOURI RIVER at Fort Benton (9)	2955	74		3,980	2560	74		3,468
TWO MEDICINE CREEK near Browning (10)	158	64		248	145	62		235
BADGER CREEK near Browning	83.0	64		130	70.0	62		113
CUT BANK CREEK at Cut Bank	70.0	61		114	64.0	59		108
MARIAS RIVER near Shelby	290	54	247	542	270	52	232	518
MISSOURI RIVER at Virgelle (11)	3235	71		4,570	3240	71		4,030
MISSOURI RIVER near Landusky (11)	3570	72		4,980	3150	72		4,383
NORTH FORK MUSSELSHELL RIVER near DelPine	4.6	72		6.4	3.8	70		5.4
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	44.5	71		62.8	41.3	70		58.9
MISSOURI RIVER below Fort Peck Dam (11)	3440	69		4,961	3050	69		4,428
MILK RIVER at Eastern Crossing*	249	91		275				
MILK RIVER at Eastern Crossing (12)*	82.8	76		109				
INFLOW LAKE SAKAKAWA, ND (11)	9310	73		12,755	8475	73		12,239
SASKATCHEWAN RIVER BASIN								
SWIFTCURRENT CREEK at Sherburne (13)	98.0	77	100	128	85.0	76	87.9	112
ST. MARY'S RIVER near Rabb (13)	370	76		487	310	75		416

- (1) Adjusted for storage in Lima Reservoir.
- (2) Adjusted for storage in Lima and Clark Canyon Reservoirs.
- (3) Adjusted for storage in Hebgen Lake.
- (4) Adjusted for storage in Hebgen Lake and Ennis Lake.
- (5) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
- (6) Adjusted for storage in Middle Creek Reservoir.
- (7) Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
- (8) Adjusted for storage in Gibson Reservoir & diversions.
- (9) Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek & Canyon Ferry Reservoirs.
- (10) Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
- (11) Adjusted for all upstream reservoirs.
- (12) Flow at Eastern Crossing minus St. Mary's Canal.
- (13) Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

*March-September forecast



MISSOURI RIVER & HUDSON BAY DRAINAGES
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

Short runoff period expected

The Missouri River drainage continues to show a large variation in projected runoff. The southwest corner of Montana can expect average to a little below average streamflows. This will decrease to very low runoff from the tributaries north and west of Great Falls.

With the low snowpacks in most areas, runoff is expected to occur over a much shorter period than usual.

Irrigation supplies in the Beaverhead, Ruby, Madison and Gallatin should be near to or a little below average. However, water users in all other drainages not having stored water can expect to see moderate to severe shortages as the irrigation season progresses.

Farmers and ranchers who do not have a good water supply should consider cropping or management alternatives that would be more in tune with the projected water shortages. Local Conservation District and County Extension offices are available to provide assistance.

Updated forecasts will be issued soon after April 1 snow surveys are completed.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Beaverhead	Fair	Fair
Ruby	Avg	Avg
Big Hole	Fair	Fair
Boulder	Fair	Poor
Jefferson	Fair	Fair
Madison	Fair	Fair
Gallatin	Fair	Fair
West-Side Missouri	Fair	Poor
Smith-Belt	Fair	Poor
Sun	Poor	Poor
Teton	Poor	Poor
Marias	Poor	Poor
Judith	Fair	Fair
Musselshell	Fair	Fair
Milk	Poor	Poor
Bear Paws	Avg	Avg
St. Mary's	Fair	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Beaverhead	29	82	83
Ruby	13	94	97
Big Hole	26	74	69
Boulder	14	78	65
Jefferson	82	81	79
Madison	35	81	81
Gallatin	24	100	85
Missouri Headwater	141	85	81
West-side Missouri (Toston-Cascade)	11	72	59
Smith-Belt-Arrow	11	102	76
Missouri Main-stem	22	89	69
Teton & Sun	12	56	36
Marias	6	87	52
Marias-Teton-Sun	18	71	44
Judith-Musselshell	17	112	80
Milk	11	115	63
Bear Paws	7	202	98
Missouri (Total)	198	86	76
Saskatchewan			
St. Mary's	6	78	56
Bow River in Alberta	10	109	80

Below average snowpack continues

Smaller mountain ranges in the central part of the State showed a slight improvement in snowpack conditions. However, the rest of the Missouri River drainage maintained about the same snow cover percentage or dropped a little from last month.

Many of the snow measurements along the Continental Divide from MacDonald Pass north, show near record lows for water content. Storm activity increased during the last week of February but was not enough to overcome 3 weeks of dry weather.

Even if precipitation becomes average for the next 2 months, most of the area will still have below average snowpack for the season.

Normally, about 82 percent of the season's snowpack is accumulated by March 1. The maximum levels of water stored in the snow usually occur around mid-April.



Snowpacks in some mountain ranges of southwest Montana are near average.

Yellowstone River Drainage

STREAMFLOW FORECASTS

BASIN STREAM and or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRES FEET		FORECAST		THOUSAND ACRES FEET	
	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average
PERIOD	April - September				April - July			
YELLOWSTONE RIVER at Corwin Springs	1670	82	1725	2,027	1390	82	1397	1,686
YELLOWSTONE RIVER near Livingston	1970	83		2,379	1617	82		1,969
BOULDER RIVER at Big Timber	298	75		398	275	75		366
STILLWATER near Absarokee (1)	494	78		632	410	78		528
CLARK'S FORK RIVER near Belfry	450	72		628	405	72		563
ROCK CREEK near Red Lodge	Streamflow measurements		115		discontinued by USGS		88.1	
INFLOW COONEY RESERVOIR near Boyd (2)	46.0	76		60.5	37.0	75		49.5
YELLOWSTONE RIVER at Billings	3617	81	3133	4,516	3062	80	3793	3,833
BIGHORN RIVER near St. Xavier (3)	1466	74	2060	1,976	1325	74	1849	1,794
LITTLE BIGHORN RIVER near Hardin	155	85		182	135	83		162
TONGUE RIVER near Decker	235	87		269	211	86		244
YELLOWSTONE RIVER at Miles City (4)	5286	78		6,787	4600	78		5,906
POWDER RIVER at Moorhead	213	81		263	196	81		243
YELLOWSTONE RIVER near Sidney (5)	5760	77		7,518	5040	77		6,544

- (1) Adjusted for storage in Mystic Lake.
- (2) Adjusted for storage in Cooney Reservoir.
- (3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
- (4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.
- (5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION
WITH THE NATIONAL WEATHER SERVICE

Yellowstone snow- pack remains low

Snowpack conditions improved a little in the Crazy Mountains but remained about the same or dropped in other areas.

The headwaters of the Yellowstone River in Yellowstone National Park have well below average levels of water stored in the snowpack. Storms began moving through the area near the end of February but were not intensive enough to overcome earlier dry periods.

The outlook for March is not favorable for any significant improvement in the snowpack.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Yellowstone at Livingston	Fair	Poor
Shields	Fair	Fair
Boulder	Fair	Poor
Sweetgrass - Big Timber	Avg	Fair
Stillwater	Fair	Poor
Rock Creek	Fair	Poor
Clark's Fork	Fair	Poor
Yellowstone above Bighorn	Fair	Poor
Bighorn	Fair	Fair
Little Bighorn	Fair	Fair
Tongue	Fair	Fair
Powder	Fair	Fair
Lower Yellowstone	Fair	Fair

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

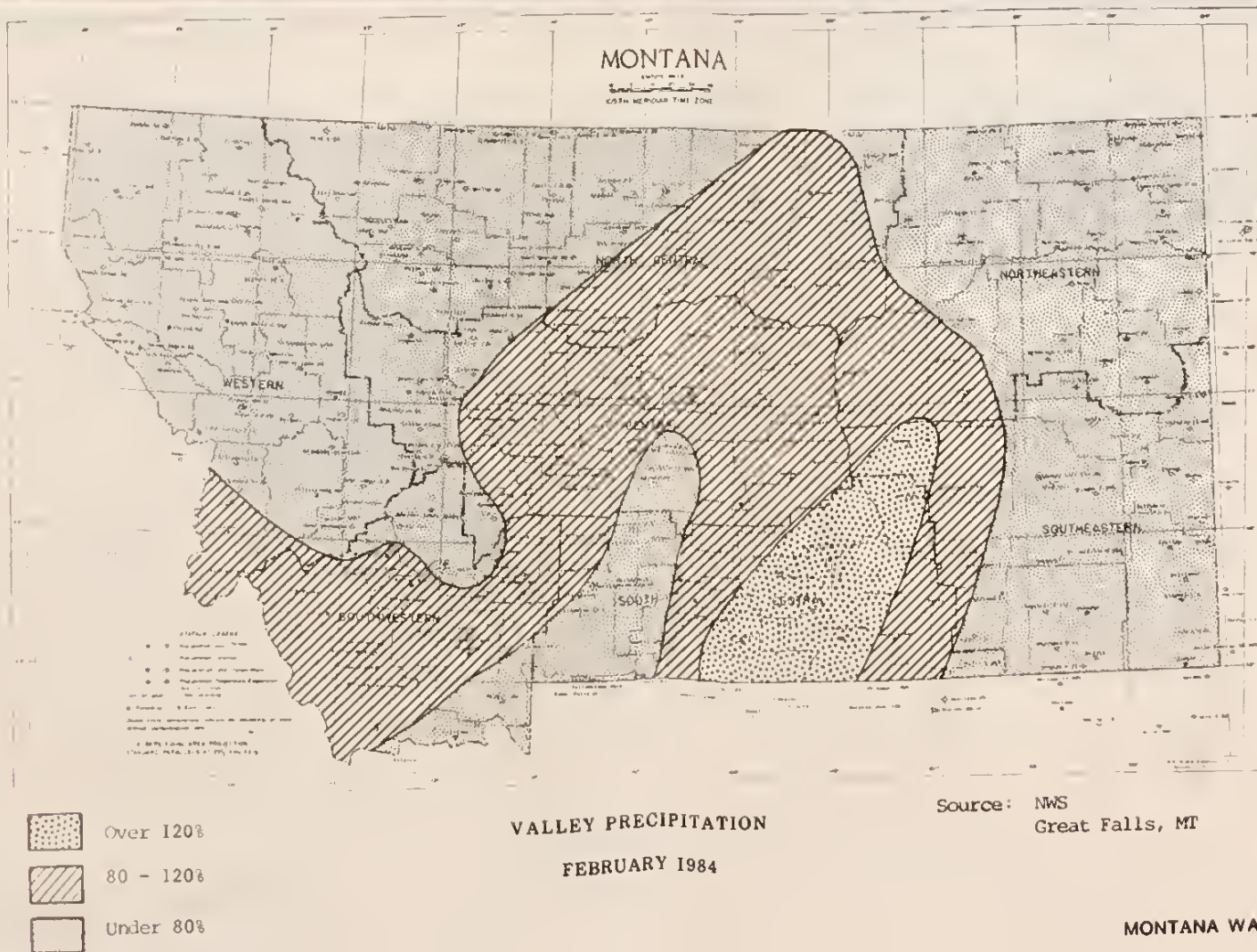
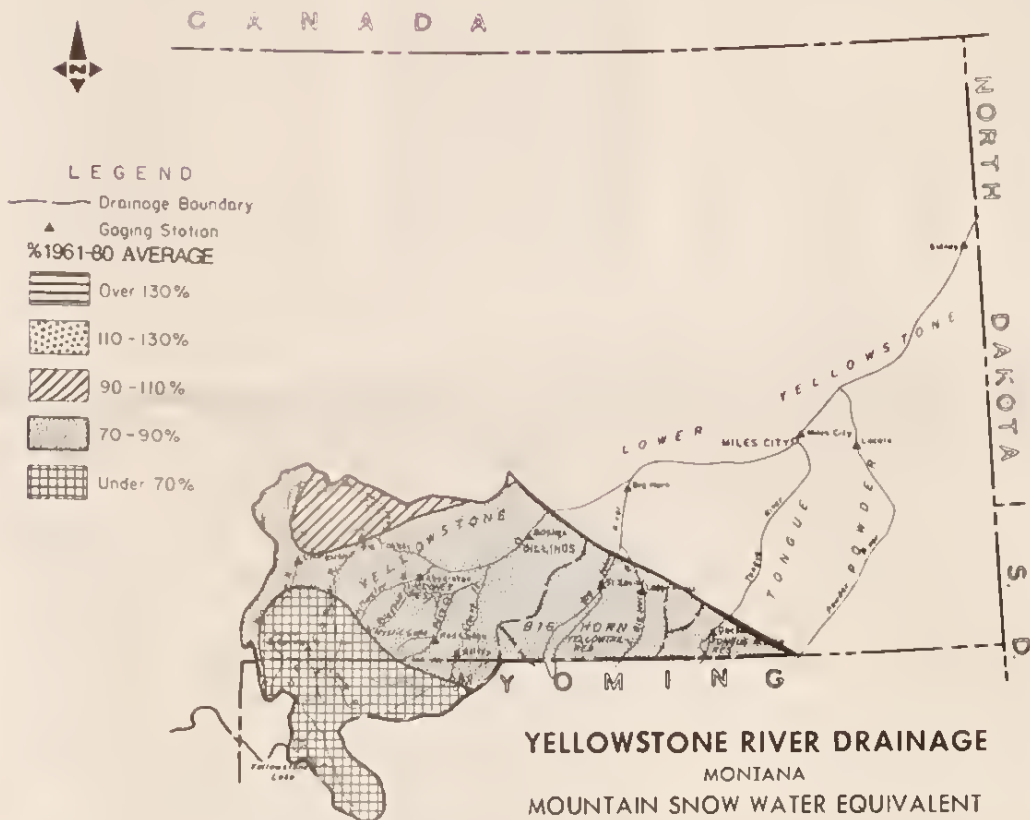
RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Upper Yellowstone ab Livingston	21	88	69
Shields	10	102	78
Boulder & Stillwater	6	98	68
Rock Creek & Clark's Fork	16	85	70
Yellowstone (ab Bighorn River)	53	91	71
Bighorn/Wyoming	29	96	77
Little Bighorn	3	86	78
Bighorn (Total)	32	95	77
Tongue	9	95	80
Powder	5	89	70
Yellowstone (Total)	99	92	73

Water shortages expected

All streams in the Yellowstone drainage are forecast to have runoff in the 70 to 85 percent of average range. With the shortage of high elevation snowpack, streamflows are expected to drop off faster and sooner than usual.

This will create some moderate to severe shortages of irrigation water supplies on smaller streams during the main irrigation season. Irrigators not having stored water should be prepared to get by with less water than usual or should change their operations to adjust to this reduced supply. Assistance is available from local Conservation District and County Extension offices.

Streamflow forecasts will be updated soon after completion of the April 1 snow surveys.



SNOW SURVEY DATA

SNOW March 1, 1984

DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
ABUNDANCE LAKE	8800	3/02	50	13.4	15.9	17.6
AMBROSE	6480	2/24	35	8.2	9.4	11.8
ARCH FALLS	7350	2/27	36	9.4	7.8	10.7
ASHLEY DIVIDE	4820	2/24	18	3.3	4.8	6.9
ASHLEY LAKE	4000	2/24	15	3.3	4.9	6.3
BADGER PASS	6900	2/29	58	19.7	24.3	35.3
BADGER PASS PILLOW	6900	3/01	SP	16.6	19.6	28.1
BALD EAGLE PEAK	5700	2/27	88	33.2	42.9	54.8
BALO RIDGE	7500	2/29	42	10.5	8.6	11.3
BANFIELD MOUNTAIN	5600	2/27	34	9.0	20.3	21.6
BANFIELD MOUNTAIN PILLOW	5600	2/27	SP	8.6	18.9	17.0
BARRE CREEK	5500	2/28	68	24.6	38.9	42.5
BARRE MIDWAY	4600	2/28	52	14.5	30.6	33.4
BARRE TRAIL	3800	2/28	11	2.5	4.8	9.6
BARKER LAKES PILLOW	8250	3/01	SP	8.9	14.6	13.1
BASIN CREEK	7180	2/27	27	4.7	7.4	6.7
BASIN CREEK PILLOW	7180	3/01	SP	5.0	6.1	6.0
BASSOO PEAK	5150	3/01	13	3.2	7.2	9.7
BEAGLE SPRINGS	8850	3/01	32	5.8	7.0	7.2
BEAGLE SPRINGS PILLOW	8850	3/01	SP	6.5	5.9	6.5
BEAR BASIN	8150	2/28	53	16.0	16.2	18.8
BEAR PAW SKI AREA	5200	2/28	23	7.0	3.8	6.8
BEAVER LAKE	5900	2/29	35	10.4	13.4	21.0
BERRY MEADOW	7000	2/28	18	4.8	6.2	7.2
BIG CREEK	6750	2/28	85	29.4	38.3	39.1
BIG SKY	7700	2/28	46	12.6	12.6	13.5
BIG SKY MEADOW	6350	2/28	36	9.6	7.8	9.0
BIG SNOWY	7150	2/29	59	19.2	12.5	18.2
BLACK BEAR	7950	2/27	89	30.0	39.7	35.3
BLACK BEAR PILLOW	7950	3/01	SP	25.8	33.2	31.6
BLACK MOUNTAIN	7750	3/02	46	12.4	11.2	12.3
BLACK PINE	7100	2/29	29	6.8	9.0	12.5
BLACK PINE PILLOW	7100	3/01	SP	8.0	8.6	12.5
BLOODY DICK	7600	2/28	36	9.2	10.5	12.1
BLOODY DICK PILLOW	7550	3/01	SP	5.4	9.7	10.7
BLUE LAKE	5900	2/29	38	11.9	17.0	23.7
BOTS SOTS	7750	2/27	30	5.9	5.8	6.6
BOULDER MOUNTAIN	7950	2/24	53	15.2	14.4	16.9
BOULDER MOUNTAIN PILLOW	7950	3/01	SP	16.3	16.8	18.2
BOX CANYON	6670	2/28	26	6.8	7.2	10.9
BOX CANYON PILLOW	6700	3/01	SP	6.2	5.3	8.1
BOXELDER CREEK	5100	2/28	26	7.2	5.6	7.9
BRANHAM LAKES	8850	3/02	79	25.6	25.2	25.7
BRIOGER BOWL	7250	2/29	64	20.2	16.5	24.0
BRIDGER BOWL PILLOW	7250	2/29	SP	17.8	16.5	22.0
BRISTOW CREEK	3900	2/27	15	4.2	9.0	11.6
BRUSH CREEK TIMBER	5000	2/27	20	5.0	7.6	9.4
BULL MOUNTAIN	6600	2/28	18	4.1	5.8	5.2
CABIN CREEK	5200	2/27	1	0.1	3.2	6.8
CALL ROAD	8050	3/01	38	10.0	10.2	10.0
CALVERT CREEK	6430	2/27	30	6.6	9.6	10.5

SNOW March 1, 1984

DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
CALVERT CREEK PILLOW	6430	3/01	SP	4.9	7.6	8.8
CAMP MISERY	6400	2/29	105	37.6	40.8	42.5
CAMP SENIA	7890	2/27	22	4.7	3.8	5.1
CARROT BASIN	9000	2/28	76	26.0	31.6	31.7
CARROT BASIN PILLOW	9000	3/01	SP	21.2	26.4	24.0
CASHE CREEK PILLOW	7800	3/01	SP	7.4	7.8	6.8
CEDAR GROVE	3760	2/27	24	5.9	9.0	11.4
CHESSMAN RESERVOIR	6200	2/28	7	1.0	5.2	3.5
CHICKEN CREEK	4060	2/27	35	8.5	12.0	15.0
CLOVER MEADOW	8600	3/01	49	13.2	14.4	14.6
CLOVER MEADOW PILLOW	8800	3/01	SP	15.6	10.3	13.5
COLE CREEK	7850	2/24	50	13.0	13.6	14.3
COLE CREEK PILLOW	7850	3/01	SP	12.5	13.6	12.6
COLLEY CREEK	6300	2/29	24	5.0	3.9	7.8
COMBINATION	5600	2/28	17	3.6	4.2	5.7
COMBINATION PILLOW	5600	3/01	SP	3.7	4.2	5.3
COOKE STATION	8150	2/27	43	11.6	15.4	17.8
COPPER BOTTOM	5200	2/21	15	5.4	7.7	11.0
COPPER BOTTOM PILLOW	5200	3/01	SP	6.0	8.4	11.5
COPPER CAMP	6950	2/28	38	12.9	21.1	28.3
COPPER CAMP PILLOW	6950	3/01	SP	13.8	21.6	33.6
COPPER CREEK	5700	2/28	15	5.2	12.0	14.3
COPPER LAKE CREEK	6100	2/28	29	9.4	16.9	22.4
COPPER MOUNTAIN	7700	3/01	32	7.6	8.2	9.7
COTTONWOOD CREEK	6400	3/02	24	5.3	5.2	6.8
COYOTE HILL	4200	2/28	24	6.8	7.7	10.0
CREVICE MOUNTAIN	8400	2/28	30	7.3	7.6	9.7
CRYSTAL LAKE	6050	2/29	42	12.2	8.2	12.2
CRYSTAL LAKE PILLOW	6050	3/01	SP	11.7	8.3	11.0
DAD CREEK LAKE	8400	3/01	43	9.6	9.8	11.5
DAISY PEAK	7600	3/01	27	6.2	6.2	10.1
DALY CREEK	5780	2/25	30	7.9	8.5	10.6
DALY CREEK PILLOW	5780	3/01	SP	3.5	8.9	11.4
DARKHORSE LAKE	8600	3/03	55	17.8	18.8	22.6
DARKHORSE LAKE PILLOW	8700	3/01	SP	17.0	14.8	19.6
DAVIS CREEK	5400	2/27	45	12.6	22.7	22.5
DEADMAN CREEK	6450	3/01	29	7.3	6.8	10.6
DEADMAN CREEK PILLOW	6450	3/01	SP	6.6	5.9	9.8
DESERT MOUNTAIN	5600	2/27	33	8.9	12.6	14.2
DEVILS SLIDE	8100	2/27	60	17.1	16.0	19.4
DISCOVERY BASIN	7050	2/27	30	7.4	6.8	9.2
DIVIDE	7800	3/01	37	9.6	11.3	9.9
DIVIDE PILLOW	7800	3/01	SP	8.6	10.2	9.2
DIX HILL	6400	2/26	28	6.8	7.8	10.7
DUPUYER CREEK PILLOW	5750	3/01	SP	3.7	-	-
EAST FORK R.S.	5400	2/27	18	4.7	4.6	6.6
EL DORADO MINE	7800	2/27	57	14.0	15.0	18.2
ELK HORN SPRINGS	7800	3/02	27	4.8	6.6	8.4
ELK PEAK	8000	2/27	47	11.8	10.3	14.7
EMERY CREEK	4350	2/27	38	10.2	13.9	14.0
EMERY CREEK PILLOW	4350	3/01	SP	9.2	14.1	14.4
FATTY CREEK	5500	2/28	55	16.5	19.4	20.9
FISH CREEK	8000	2/27	29	5.2	8.8	8.2
FISHER CREEK	9100	2/27	72	23.5	26.5	34.1
FISHER CREEK PILLOW	9100	3/01	SP	22.1	25.3	31.6
FIVE-BULL	5700	2/28	1	0.2	3.6	6.5
FLATTOP MOUNTAIN PILLOW	6300	3/01	SP	28.7	39.1	43.0
FLEECER RIDGE	7500	2/28	26	6.3	8.4	9.9
FOOLHEN	8280	3/02	40	8.6	12.0	15.0
FOUR MILE	6900	3/01	24	5.8	7.8	7.4
FOURTH OF JULY	3450	2/27	19	4.4	7.6	9.9

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DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
FRED BURR PASS	8000	2/29	61	17.6	17.4	22.1
FREIGHT CREEK	6000	2/29	21	6.1	8.7	13.8
FRIDAY HILL	4620	2/27	42	10.8	22.4	22.9
FROHNER MEADOWS	6480	2/28	17	4.2	6.6	7.1
FROHNER MEADOWS PILLOW	6480	3/01	SP	5.3	6.2	6.7
GARVER CREEK	4250	2/27	21	5.0	10.3	10.7
GARVER CREEK PILLOW	4250	3/01	SP	4.5	9.6	9.5
GIBBONS PASS	7100	2/27	58	17.0	21.3	20.7
GOAT MOUNTAIN	7000	2/28	13	3.5	5.5	10.2
GOLD CREEK LAKE	7200	2/27	45	9.8	10.9	13.5
GOLD STONE	8100	2/28	45	12.0	12.9	15.1
GRASSHOPPER	7000	2/27	19	4.1	4.2	5.3
GRAVE CREEK	4300	2/27	32	8.9	18.2	16.7
GRAVE CREEK PILLOW	4300	3/01	SP	9.4	16.0	16.4
GRIFFIN CREEK DIVIDE	5150	3/01	22	5.0	8.2	11.1
GUNSIGHT LAKE	6300	2/29	68	24.5	28.8	36.9
HAND CREEK	5030	2/27	30	6.8	9.6	12.7
HAND CREEK PILLOW	5030	3/01	SP	5.7	4.8	13.6
HAWKINS LAKE	6450	2/27	52	15.9	29.6	28.2
HAWKINS LAKE PILLOW	6450	3/01	SP	13.2	23.2	26.8
HEART LAKE TRAIL	4800	2/29	40	13.2	15.4	20.3
HEBGEN DAM	6550	2/29	39	10.8	13.0	11.3
HELL ROARING DIVIDE	5770	2/29	62	20.5	22.2	28.4
HERRIG JUNCTION	4850	2/27	53	14.4	22.6	24.4
HOLBROOK	4530	3/02	15	3.9	6.4	9.6
HOOD MEADOW	6600	2/27	31	8.0	6.1	9.6
HOODOO BASIN	6050	2/29	89	33.2	40.4	44.6
HOODOO BASIN PILLOW	6050	3/01	SP	26.3	36.0	40.0
HOODOO CREEK	5900	2/29	79	30.0	36.6	41.8
INDEPENDENCE	7850	2/28	39	11.1	10.8	16.8
INTERGAARD	6450	3/02	18	4.2	4.8	7.6
JAHNKE LAKE TRAIL	7200	2/28	31	6.6	8.4	8.9
JOHNSON PARK	6450	3/01	15	3.2	3.9	7.2
KEELER CREEK	3300	2/27	23	5.8	11.3	14.3
KINGS HILL	7500	3/01	36	9.0	7.7	12.2
KISHENEHN	3890	2/28	16	3.3	6.0	8.3
KIWANIS CAMP	3720	2/28	9	2.2	.0	2.1
KRAFT CREEK PILLOW	4750	3/01	SP	9.2	11.1	12.5
LAKE CREEK	6100	3/01	33	7.8	8.3	8.0
LAKEVIEW CANYON	6930	2/27	28	6.8	12.8	10.4
LAKEVIEW RIDGE	7400	2/27	28	7.0	12.8	9.3
LAKEVIEW RIDGE PILLOW	7400	3/01	SP	8.6	13.9	10.7
LEMHI PASS	7480	3/03	38	6.1	5.2	8.0
LEMHI RIDGE	8100	3/03	40	7.2	6.4	8.9
LEMHI RIDGE PILLOW	8100	3/01	SP	5.1	6.2	9.0
LICK CREEK	6860	2/27	36	8.7	6.4	8.8
LICK CREEK PILLOW	6860	3/01	SP	7.1	6.0	7.7
LITTLE PARK	7400	2/28	45	12.2	11.7	14.4
LOGAN CREEK	4300	2/27	14	3.3	4.4	7.4
LONE MOUNTAIN	8880	2/28	60	18.4	18.6	19.6
LOST HORSE	5940	2/28	68	21.8	24.0	29.5
LOST SOUL	4800	2/27	26	6.4	14.5	15.0
LOWER TWIN	7900	3/01	52	16.1	18.5	18.6
LOWER TWIN PILLOW	7900	3/01	SP	14.4	18.3	17.1

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SNOW March 1, 1984		THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Elevation				Last Year	Average
LUBRECHT FLUME	4680	3/02	3	1.6	4.4	5.8
LUBRECHT FLUME PILLOW	4680	3/01	SP	3.2	4.9	5.2
LUBRECHT FOREST # 3	5450	3/01	13	3.6	4.8	7.0
LUBRECHT FOREST # 4	4650	3/01	3	1.2	2.0	3.5
LUBRECHT FOREST # 6	4040	3/01	2	0.9	2.3	4.2
LUBRECHT HYDRO PLOT	4200	3/02	11	3.0	4.6	6.6
MADISON PLATEAU	7750	2/27	54	15.3	21.9	19.4
MADISON PLATEAU PILLOW	7750	2/27	SP	14.1	22.0	20.6
MANY GLACIER	4900	2/29	32	9.6	15.9	18.8
MANY GLACIER PILLOW	4900	3/01	SP	9.2	14.7	17.8
MARIAS PASS	5250	2/29	24	7.2	14.0	15.9
MAYNARD CREEK	6210	2/29	40	10.7	10.3	14.1
MAYNARD CREEK PILLOW	6210	2/29	SP	7.8	7.8	10.5
MIDDLE MILL CREEK	7850	3/02	54	14.9	15.4	14.5
MILL CREEK	7500	2/29	35	7.5	7.2	11.7
MINERAL CREEK	4000	2/28	35	9.8	15.4	17.1
MONUMENT PEAK	8850	2/28	56	17.3	19.0	23.9
MONUMENT PEAK PILLOW	8850	3/01	SP	12.7	13.6	19.8
MOULTON RESERVOIR	6850	2/28	26	5.1	4.6	6.9
MOUNT LOCKHART	6400	2/29	37	10.6	14.6	20.8
MOUNT LOCKHART PILLOW	6400	3/01	SP	9.6	12.9	19.0
MUDD LAKE	7650	2/27	46	11.4	17.2	18.0
MULE CREEK	8300	3/02	35	8.8	10.7	11.3
MULE CREEK PILLOW	8350	3/01	SP	9.3	9.8	11.4
NEVADA CREEK	6480	2/28	27	6.7	9.5	11.1
NEVADA CREEK PILLOW	6480	3/01	SP	6.0	9.1	10.7
NEW WORLD	6900	2/29	42	11.4	9.8	13.0
NEWTON MOUNTAIN	5600	2/27	65	20.4	34.5	33.7
NEZ PERCE CAMP	5650	2/26	48	11.4	11.4	13.7
NEZ PERCE CAMP PILLOW	5650	3/01	SP	11.1	10.9	13.6
NEZ PERCE CREEK	6500	3/01	20	4.3	5.0	6.6
NEZ PERCE PASS	6570	2/26	51	14.0	11.7	15.4
NOISY BASIN	6040	2/29	102	36.8	37.5	37.9
NOISY BASIN PILLOW	6040	3/01	SP	30.9	34.6	33.1
NORTH FK. ELK CREEK	6250	3/02	28	6.3	8.8	11.0
NORTH FK. ELK CREEK PILLOW	6250	3/01	SP	6.7	8.5	10.5
NORTH FORK JOCKO	6330	2/28	92	31.6	34.6	40.8
NORTH MEADOW	7500	3/01	25	5.8	7.8	7.2
NORTHEAST ENTRANCE	7350	3/02	24	5.9	6.4	9.0
NORTHEAST ENTRANCE PILLOW	7350	3/01	SP	5.7	7.8	8.8
NOTCH	8500	3/01	53	15.6	16.2	13.6
OPHIR PARK	7150	2/26	42	11.4	14.4	15.4
PETERSON MEADOWS	7200	2/28	26	6.2	6.5	9.0
PETERSON MEADOWS PILLOW	7200	2/28	SP	6.4	6.6	8.7
PICKFOOT CREEK	6650	2/24	26	7.2	9.3	11.5
PICKFOOT CREEK PILLOW	6650	3/01	SP	6.5	7.9	10.2
PIKE CREEK PILLOW	5930	3/01	SP	12.9	21.5	24.3
PIPESTONE PASS	7200	3/01	13	3.0	3.5	4.4
PLACER BASIN PILLOW	8830	3/01	SP	10.8	10.2	14.8
POORMAN CREEK	5100	2/27	59	19.0	29.4	31.7
POORMAN CREEK PILLOW	5100	3/01	SP	16.0	24.2	28.9
PORCUPINE	6500	2/29	24	6.0	5.0	6.8
PORCUPINE PILLOW	6500	3/01	SP	6.1	5.9	6.6
POTOMAGETON PARK	7150	2/28	44	11.1	13.4	13.6
RED MOUNTAIN	6000	3/01	36	10.0	16.8	17.2
RED TOP	5260	2/27	54	15.3	27.0	28.1
ROCK CREEK	5600	2/29	39	11.3	6.8	8.3
ROCK CREEK MEADOWS	8160	2/28	50	13.8	15.1	18.7
ROCKER PEAK	8000	2/28	33	8.3	8.8	13.3
ROCKER PEAK PILLOW	8000	3/01	SP	6.9	9.6	12.6
ROCKY BOY	4700	2/28	14	4.4	1.4	4.5
ROCKY BOY PILLOW	4700	2/28	SP	4.3	3.6	4.4

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		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
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NAME	Elevation					
SACAJAWEA	6550	2/29	40	11.5	11.8	13.1
SADDLE MOUNTAIN	7940	2/27	60	17.4	21.6	22.3
SADDLE MOUNTAIN PILLOW	7900	3/01	SP	17.8	21.3	22.6
SENTINEL CREEK	8300	2/28	57	16.8	21.2	21.0
SHOWER FALLS	8100	2/27	63	18.4	16.4	20.2
SHOWER FALLS PILLOW	8100	3/01	SP	18.3	16.4	19.1
SILVER RUN	6630	2/27	21	4.7	4.6	5.5
SILVER RUN PILLOW	6630	3/01	SP	4.6	3.8	4.2
SKALKAHO SUMMIT	7250	2/25	54	14.4	19.0	23.5
SKALKAHO SUMMIT PILLOW	7250	3/01	SP	12.6	17.9	23.5
SKYLARK TRAIL PILLOW	6200	3/01	SP	22.2	23.4	28.5
SLAG-A-MELT LAKE	8750	3/03	56	17.5	23.2	22.3
SLIDE ROCK MOUNTAIN	7100	3/01	40	10.4	10.4	14.6
SMUGGLER MINE	6960	3/02	38	9.0	10.2	8.9
SOUTH FORK SHIELDS	8100	2/29	70	22.0	17.4	21.2
SOUTH FORK SHIELDS PILLOW	8100	3/01	SP	14.4	11.7	13.6
SPOTTED BEAR MOUNTAIN	7000	2/29	29	8.4	11.4	14.2
SPUR PARK	8100	3/01	50	14.1	12.4	18.6
SPUR PARK PILLOW	8100	3/01	SP	14.4	14.1	19.1
STAHL PEAK	6030	2/27	78	25.7	34.0	35.9
STAHL PEAK PILLOW	6030	3/01	SP	21.6	31.2	30.0
STEMPLE PASS	6600	2/28	20	3.8	7.0	9.3
STORM LAKE	7780	2/28	35	8.8	11.2	11.3
STORYKER BASIN	6180	2/27	67	19.3	28.4	31.2
STUART MILL	6500	3/02	15	3.3	4.6	6.2
STUART MOUNTAIN	7400	2/28	70	24.0	27.8	28.6
SUCKER CREEK	3960	2/28	2	.4	.0	0.5
TAYLOR ROAD	4080	2/28	13	3.6	.0	3.4
TEN MILE LOWER	6600	2/28	21	5.1	6.4	6.7
TEN MILE MIDDLE	6800	2/27	30	6.2	7.8	10.0
TEN MILE UPPER	8000	2/27	36	8.0	8.8	12.3
TEPEE CREEK	8000	3/01	43	11.8	12.8	13.2
TEPEE CREEK PILLOW	8000	3/01	SP	10.6	11.5	10.7
TIMBERLINE CREEK	8850	2/27	42	9.2	12.2	12.3
TRAIL CREEK	7090	3/03	36	6.0	4.3	7.3
TRINKUS LAKE	6100	2/29	85	29.3	31.9	38.9
TRUMAN CREEK	4060	2/28	11	2.6	2.8	3.5
TV MOUNTAIN	6800	2/28	45	12.9	15.8	16.8
TWELVEMILE CREEK	5600	2/28	45	13.8	16.8	20.9
TWELVEMILE CREEK PILLOW	5600	3/01	SP	11.3	12.9	17.3
TWENTY-ONE MILE	7150	2/28	41	10.8	13.6	16.3
TWIN CREEKS	3580	2/29	17	5.7	9.8	11.7
TWIN LAKES	6510	2/28	83	27.2	29.6	37.7
TWIN LAKES PILLOW	6400	3/01	SP	24.8	30.2	36.9
UPPER HOLLAND LAKE	6200	2/28	70	23.2	23.6	32.7
WALDRON	5600	2/29	11	2.4	6.2	10.1
WALDRON PILLOW	5600	3/01	SP	4.3	7.1	9.6
WARM SPRINGS	7800	2/29	48	12.3	12.8	19.0
WARM SPRINGS PILLOW	7800	3/01	SP	13.6	14.2	19.2
WEASEL DIVIDE	5450	2/27	62	18.1	31.6	31.4
WEST ROSEBUD	7500	3/01	21	5.2	5.2	9.9
WEST YELLOWSTONE	6700	2/28	35	8.7	10.4	11.2
WEST YELLOWSTONE PILLOW	6700	2/28	SP	6.9	8.4	8.8
WHISKEY CREEK	6800	2/27	48	13.3	18.4	17.9
WHISKEY CREEK PILLOW	6800	3/01	SP	10.5	15.4	14.7

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		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
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NAME	Elevation					
WHITE MILL	8700	2/27	56	16.7	21.4	24.9
WHITE MILL PILLOW	8700	3/01	SP	14.9	20.3	21.3
WHITE PINE RIDGE	8850	3/01	29	5.0	4.2	4.6
WILLOW CREEK	6500	2/24	34	7.4	5.8	7.7
WOOD CREEK	5960	2/28	13	3.0	8.0	11.5
WOOD CREEK PILLOW	5960	2/01	SP	2.7	8.4	11.3
WRONG CREEK	5700	2/26	19	4.7	7.7	13.4
WRONG RIDGE	6800	2/26	31	8.3	11.9	18.1

IDAHO

ABOVE BURKE (ID)	4100	2/28	40	12.0	15.4	19.8
BEAR MOUNTAIN (ID)	5400	2/27	91	32.6	59.7	55.3
BEAR MOUNTAIN PILLOW (ID)	5400	3/01	SP	30.2	57.9	-
BIG SPRINGS (ID)	6500	2/29	51	15.0	19.4	18.8
BLACK CANYON (ID)	7960	2/28	80	26.6	31.8	33.2
BLACK MOOSE (ID)	8160	2/28	82	23.8	40.4	35.1
CAMP CREEK (ID)	6580	2/29	31	6.9	14.0	9.3
CRAB CREEK PILLOW (ID)	6860	3/01	SP	11.7	22.1	-
HUMBOLDT GULCH (ID)	4250	2/28	30	8.4	12.8	-
HUMBOLDT GULCH PILLOW (ID)	4250	3/01	SP	6.4	11.5	-
ISLAND PARK (ID)	6290	2/29	47	13.6	18.3	15.3
ISLAND PARK PILLOW (ID)	6290	3/01	SP	11.2	17.9	-
KILGORE (ID)	6320	2/27	41	11.2	14.6	10.7
KIT CARSON (ID)	4950	2/26	34	8.1	5.2	-
LATHAM SPRINGS (ID)	7630	2/28	77	25.2	31.2	29.4
LOLO PASS (ID)	5230	2/28	57	17.5	19.1	27.4
LOOKOUT (ID)	5250	2/28	62	19.2	29.0	30.4
LUCKY DOG (ID)	6860	2/28	64	20.6	24.4	22.2
MOOSE CREEK (ID)	6200	2/29	51	15.6	16.8	15.1
MOOSE CREEK PILLOW (ID)	6200	3/01	SP	14.9	17.1	15.1
MOSQUITO RIDGE (ID)	5200	2/27	68	22.4	40.4	34.1
MOSQUITO RIDGE PILLOW (ID)	5200	3/01	SP	22.7	37.7	-
SAVAGE PASS (ID)	6170	2/29	56	16.9	19.6	24.3
SAVAGE PASS PILLOW (ID)	6170	3/01	SP	16.9	-	-
SAWTELL MOUNTAIN (ID)	8720	2/29	77	27.3	36.6	28.8
SUNSET (ID)	5540	2/27	82	24.6	35.5	33.1
TARGHEE PASS (ID)	6980	2/29	EST	9.3	14.4	13.4
VALLEY VIEW (ID)	6680	2/29	37	10.3	16.0	15.2
WHITE ELEPHANT (ID)	7710	2/29	52	16.2	23.6	21.0
WHITE ELEPHANT PILLOW (ID)	7710	3/01	SP	18.6	-	-

WYOMING

BALD MOUNTAIN (WY)	9380	2/29	EST	15.9	17.9	19.2
BALD MOUNTAIN PILLOW (WY)	9380	2/29	SP	14.9	15.5	-
BURGESS R.S. (WY)	7880	2/29	EST	5.4	5.8	6.9
CANYON CREEK (WY)	7940	3/01	SP	8.3	12.1	14.3
EAST ENTRANCE (WY)	6960	2/28	25	5.5	9.0	9.9
EVENING STAR PILLOW (WY)	9200	2/29	SP	21.6	13.4	-
LAKE CREEK (WY)	7780	2/28	31	7.0	7.6	8.5
LUPINE PASS (WY)	7380	3/01	25	5.5	8.0	9.7
NORRIS BASIN (WY)	7500	3/01	29	5.8	7.7	10.0
OLD FAITHFUL (WY)	7400	2/29	35	8.6	13.1	14.5
PARKERS PEAK PILLOW (WY)	9400	2/29	SP	15.2	17.8	28.1
SYLVAN LAKE PILLOW (WY)	8420	2/29	SP	16.7	17.3	-
SYLVAN PASS (WY)	7100	2/28	32	7.5	10.2	18.4
THUMB DIVIDE (WY)	7980	2/28	41	12.2	15.4	12.1
TOGWOTEE PASS (WY)	9580	2/29	65	21.6	22.5	25.2
TROUT CREEK PILLOW (WY)	8400	2/28	SP	5.2	4.7	-
TWO OCEAN PLATEAU PILLOW (WY)	89160	2/29	SP	17.8	-	27.2
WOLVERINE (WY)	7650	2/26	27	6.4	10.6	11.8
WOLVERINE PILLOW (WY)	7650	2/29	SP	6.4	9.5	-
YOUNTS PEAK PILLOW (WY)	8350	2/29	SP	15.1	12.0	17.6

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					Last Year	Average
NAME	Elevation					
ALBERTA						
AKAMINA (AL)	5810	2/28	40	10.0	17.9	-
AKAMINA PILLOW (AL)	5810	3/01	SP	10.0	-	-
ALLISON PASS (AL)	6490	2/28	38	9.3	13.8	-
BOW RIVER (AL)	5080	3/01	24	5.6	7.2	8.2
BOW RIVER SUMMIT (AL)	6660	2/29	45	11.2	11.6	13.1
CHATEAU LAWN (AL)	5710	3/01	27	6.7	9.5	10.5
CUTHEAD LAKE (AL)	7250	2/29	46	12.3	9.8	-
HIGHWOOD SUMMIT BUSH (AL)	7250	2/28	42	10.0	11.7	13.5
KATHERINE LAKE (AL)	7810	2/29	51	15.0	-	-
LARCH VALLEY (AL)	7740	2/29	50	13.6	-	-
LITTLE ELBOW SUMMIT (AL)	7090	2/28	33	7.4	10.3	9.6
LITTLE ELBOW SUMMIT PILLOW	7090	3/01	SP	8.9	-	-
MIRROR LAKE (AL)	6590	3/01	37	9.4	9.0	10.2
MOUNT SKOKI (AL)	6740	2/29	44	11.2	11.0	-
MUD LAKE (AL)	6200	2/28	32	6.4	10.1	-
PIPESTONE UPPER (AL)	5300	3/01	27	6.2	7.2	8.5
PIARMISTON HUT (AL)	7150	2/29	48	12.7	11.5	13.5
SUNSHINE VILLAGE (AL)	7300	2/29	61	16.0	-	19.6
SUNSHINE VILLAGE PILLOW (AL)	7300	3/01	SP	17.4	15.3	-
THREE ISLE LAKE (AL)	7090	2/28	62	17.9	17.5	-

BRITISH COLUMBIA

BEAVERFOOT (BC)	6200	2/28	20	4.2	-	8.3
FERNIE (BC)	3510	2/29	4	1.1	7.7	7.9
FERNIE EAST (BC)	4100	2/29	29	7.7	14.3	14.0
FERNIE NE (BC)	3510	2/29	13	3.6	9.6	9.1
FIDELITY MOUNTAIN (BC)	6130	2/28	107	35.1	31.6	42.6
FLOE LAKE (BC)	6860	2/28	66	20.7	-	26.4
GLACIER (BC)	4100	2/27	64	19.6	20.7	23.7
GRAY CREEK LOWER (BC)	5080	2/28	47	13.2	14.8	16.0
GRAY CREEK UPPER (BC)	6260	2/28	71	21.6	22.8	26.5
KICKING HORSE (BC)	5410	2/24	35	9.8	10.7	13.0
KIMBERLEY (BC)	3800	2/28	12	3.5	4.8	7.4
KIMBERLEY LOWER VOR (BC)	4490	2/29	17	4.7	6.8	8.0
KIMBERLEY MIDDLE VOR (BC)	5510	2/29	29	6.8	9.4	10.8
KIMBERLEY UPPER VOR (BC)	7020	2/29	41	10.7	13.7	17.1
MARBLE CANYON (BC)	4990	2/27	35	8.7	11.8	13.2
MORRISSEY RIDGE (BC)	6100	2/28	55	15.4	25.7	25.4
MOUNT ABBOT (BC)	6490	2/27	107	34.0	34.3	40.5
MOUNT ASSINIBOINE (BC)	7310	2/28	51	13.4	-	18.0
MOUNT JOFFRE (BC)	5740	2/28	32	6.7	-	13.0
MOYIE MOUNTAIN (BC)	4360	2/29	38	10.4	15.2	16.1
SINCLAIR PASS (BC)	4490	2/28	15	2.2	3.5	5.6
SULLIVAN MINE (BC)	5080	2/28	27	6.2	9.3	12.5
THUNDER CREEK (BC)	6590	2/28	27	5.4	-	9.6
UPPER ELK RIVER (BC)	4400	2/28	8	.6	2.8	6.8
VERMONT CREEK (BC)	4990	2/28	34	8.7	-	17.5

SP - Snow Pillow observations; water content only.
A - Aerial observation; water content estimated.
EST - Estimated water content.

MONTANA'S
MOUNTAIN SNOWPACK BELOW NORMAL



Based on current snow survey measurements, streamflows are expected to be well below normal levels soon after the main snowmelt period.

Irrigators who depend on natural streamflows (no stored water) and who have the later water rights on a stream, may wish to consider some of the following alternatives and adjust their operations to a short water supply.

1. Take land out of production for land leveling or summer fallow.
2. Plant more early maturing crops.
3. Cut small grains or millet for hay.
4. Defer new plantings of grasses and hay crops until a more favorable water supply year.
5. Take advantage of any alfalfa or clover seed production opportunities to supplement income.
6. Make arrangements early if additional pasture or winter feed will be needed.
7. Reduce livestock inventory to balance with available feed.
8. Plan to harvest only one crop of alfalfa or graze early and plow under for green manure where recommended.
9. Keep large income producing crops on most productive land.
10. Improve irrigation water distribution systems wherever possible.
11. Use the most efficient irrigation practices possible.
12. Keep ditches clean and in good repair.

CONTACT YOUR LOCAL SOIL CONSERVATION DISTRICT FOR ADDITIONAL ASSISTANCE.

Columbia River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	April - September				April - July				April - June			
KOOTENAI RIVER below Libby Dam (1)	5,540	79	6,356	7,041	4,740	79	5,346	6,020				
FISHER RIVER near Libby	165	62		264	150	60		248				
YAAK RIVER near Troy	300	57		523	280	56		500				
KOOTENAI RIVER at Leona (1)	6,410	75	7,948	8,602	5,590	75	6,857	7,498	4540	75	5,157	6,051
INFLOW NOULTON RESERVOIR nr BUTTE (Million Gallons)					184	70	182	263	165	70	179	237
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	35.7	76		46.8	28.7	76		37.8				
FLINT CREEK near Southern Cross (3)	13.2	72	18.9	18.3	11.0	71	15.2	15.4				
FLINT CREEK below Boulder Creek (4)	55.3	73		75.8	42.8	72		59.5				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	9.4	60	11.6	15.7	8.8	59	10.2	14.9				
MIDDLE FORK ROCK CREEK near Philipsburg	59.0	75		78.2	53.0	75		70.5				
NEVADA CREEK near Finn	11.5	50		23.0	10.5	49		21.3				
BLACKFOOT RIVER near Bonner	680	68		999	600	66		904	515	66		782
CLARK FORK RIVER above Milltown (6)	640	78		816	550	78		708	465	78		597
CLARK FORK RIVER above Missoula	1,320	73	1,362	1,815	1,150	71	1,133	1,612	980	71	880	1,379
WEST FORK BITTERROOT RIVER near Conner (7)	118	66		178	105	64		164				
BITTERROOT RIVER near Darby	395	68		580	350	66		532	305	66		464
SKALKAH CREEK near Hamilton	44.8	80		56.0	38.0	78		48.7				
BURNT FORK CREEK near Stevensville (8)	29.5	79		37.4	25.1	78		32.2				
BITTERROOT RIVER at Missoula (9)	1,010	67		1,504	920	66		1,384	790	66		1,191
CLARK FORK RIVER below Missoula	2,330	70		3,319	2,070	69		2,996	1,770	69		2,570
CLARK FORK RIVER at Ft. Regis	3,200	73	3,450	4,411	2,890	73	3,073	3,928	2,500	73	2,437	3,428
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,435	75		1,913	1,280	74		1,732	1,090	74		1,471
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,340	72	1,545	1,869	1,220	71	1,401	1,713	1,030	71	1,122	1,453
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	1,670	73	1,847	2,278	1,550	72	1,715	2,142	1,360	72	1,416	1,886
FLATHEAD RIVER at Columbia Falls (10)	4,550	73	4,943	6,208	4,200	73	4,508	5,721	3,600	73	3,654	4,921
SWAN RIVER near Big Fork	535	78		689	470	78		604				
FLATHEAD RIVER near Polson (11)	5,300	73	6,130	7,278	4,870	73	5,538	6,712	4,200	73	4,420	5,759
CLARK FORK RIVER near Plains (11)	8,340	69	9,880	12,153	7,600	69	8,748	11,071	6,530	69	6,902	9,459
THOMPSON RIVER near Thompson Falls	180	69		261	155	67		233				
PROSPECT CREEK at Thompson Falls	100	70		142	92.5	70		132				
CLARK FORK RIVER at Whitehorse Rapids (12)	9,250	68		13,575	8,420	68		12,351	7,185	68		10,570

- (1) Adjusted for storage in Lake Kootenai.
(2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
(3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
(4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
(5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
(6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir.
(8) Adjusted for diversion into Sunset Highline Canal.
(9) Difference in observed flow Clark Fork above and below Missoula.
(10) Adjusted for storage in Hungry Horse Reservoir.
(11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
(12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Tobacco	Fair	Poor
Little Bitterroot	Fair	Poor
Mission Valley	Fair	Fair
Flint Creek	Fair	Fair
Upper Clark Fork	Fair	Fair
Nevada Creek	Fair	Poor
Blackfoot	Fair	Poor
West-side Bitterroot	Fair	Fair
East-side Bitterroot	Fair	Fair
Bitterroot River	Fair	Fair
Lower Clark Fork	Fair	Poor

Deep snow needed

Snowpack improved slightly in the southern portions of the Clark Fork and Bitterroot but remained the same or declined in other areas.

Most snow courses along the Continental Divide in the Blackfoot and Flathead River drainages have water contents that are near minimum of record. The Swan and Mission Mountains show a little better snow cover because of good early season snows.

It appears that weather patterns may be changing and a little more moisture could be directed into this

area. However, it will take much above average snowfall over the next 2 months to make significant improvements in present conditions. For example, it would require about 300 inches of snowfall in the higher elevations of the Cabinet Mountains south of Libby during March to bring the present snowpack up to average by April 1.

In the Bitterroot Range, about 170 inches of snowfall would be needed while around 200 inches are needed in the headwaters of the Blackfoot.

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
East Kootenay/BC.	25	101	66
Kootenai/Montana	30	59	54
Kootenai above Bonners Ferry...	55	72	59
Little Bitterroot	9	70	47
N. Fk. Flathead..	13	66	62
M. Fk. Flathead..	12	79	59
S. Fk. Flathead..	13	86	76
Swan	11	90	81
Flathead	58	80	68
Stillwater & Whitefish.....	9	73	57
Clark Fork above Blackfoot	42	82	67
Blackfoot	23	72	57
Upper Clark Fork above Missoula	65	78	63
Lower Clark Fork below Missoula	21	81	68
Clark Fork (Total w/o Flathead)...	19	71	63
Pend O'Reille (Clark Fork & Flathead)	105	76	64
Columbia (Pend O'Reille & Kootenai)	163	78	66
	218	76	64

Runoff forecast below average

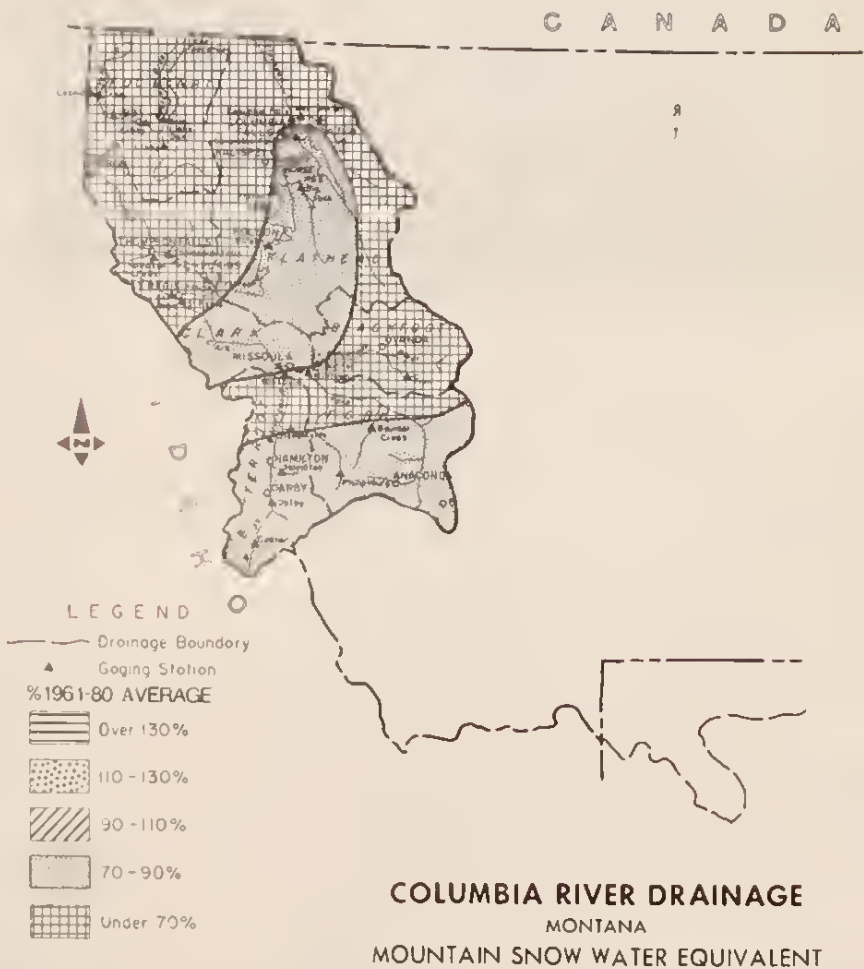
Below average runoff is forecast for all drainages in the Columbia. Streamflows are expected to start receding much earlier than normal.

Shortages of irrigation water supplies could be moderate to severe on streams not having storage projects. Irrigators that do not have an early water right or stored water should consider changing operations or crops to reduce the impact of a short supply. Local Conservation District or County Extension offices can provide assistance.

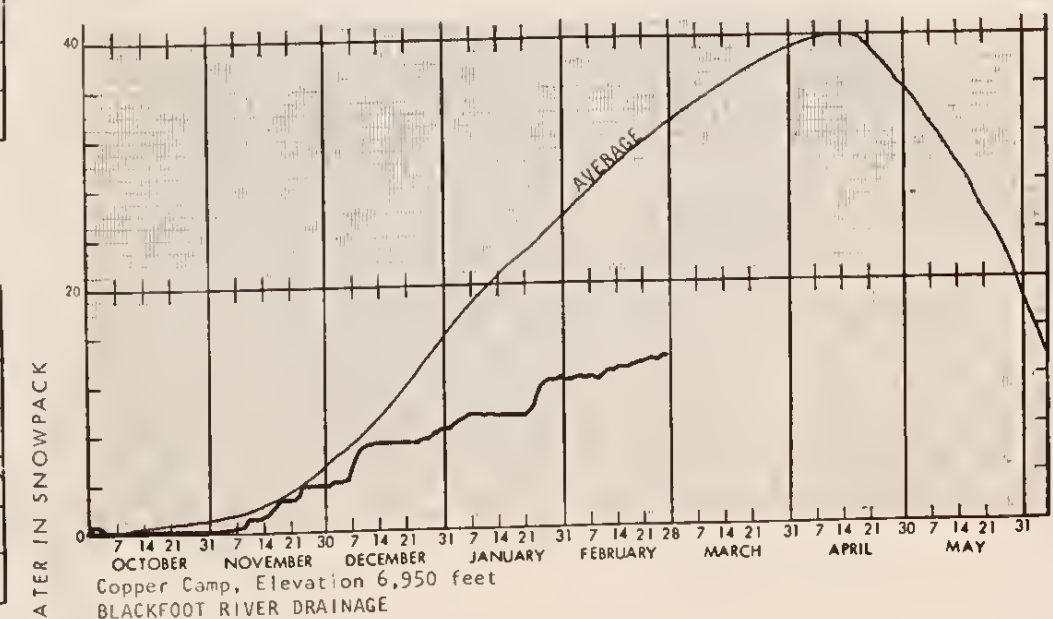
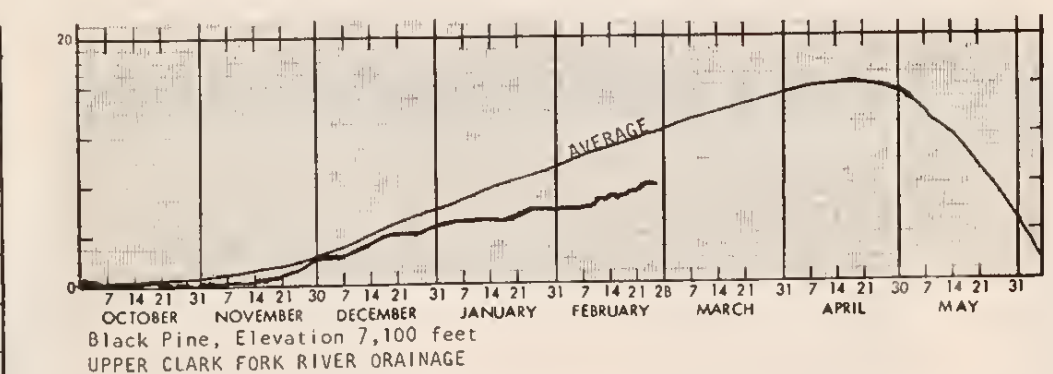
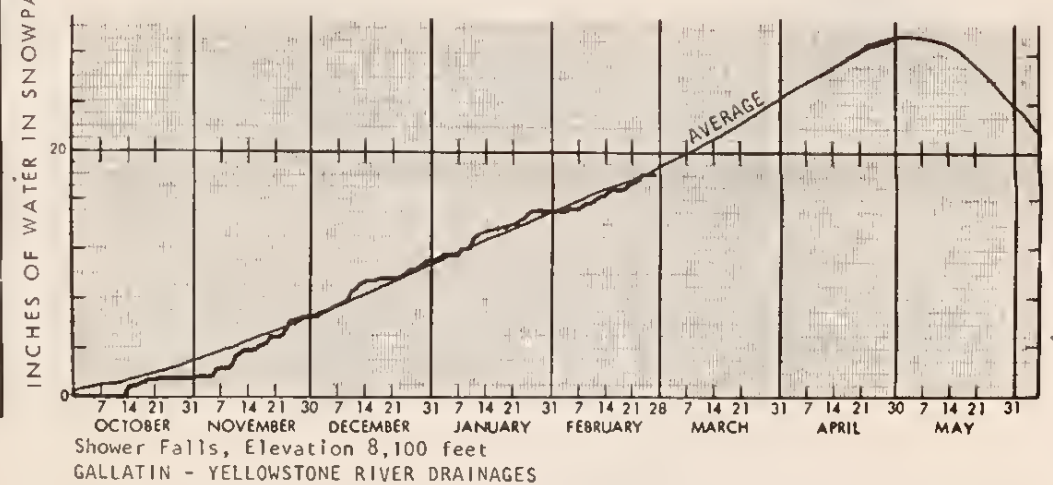
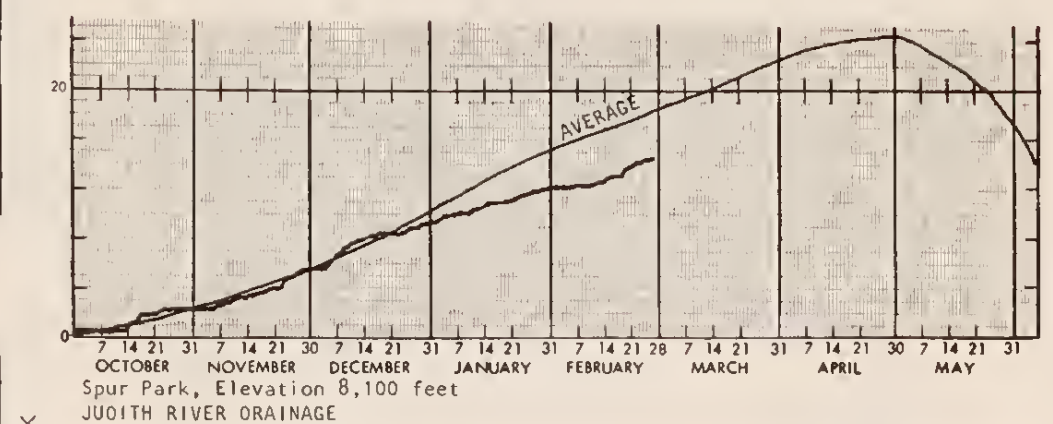
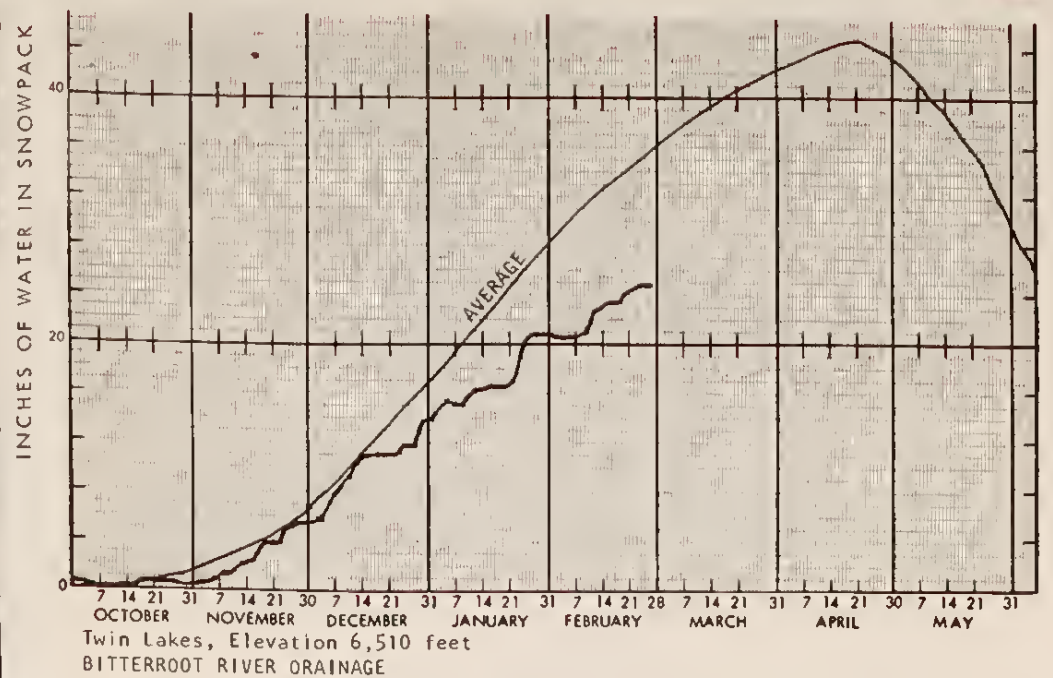
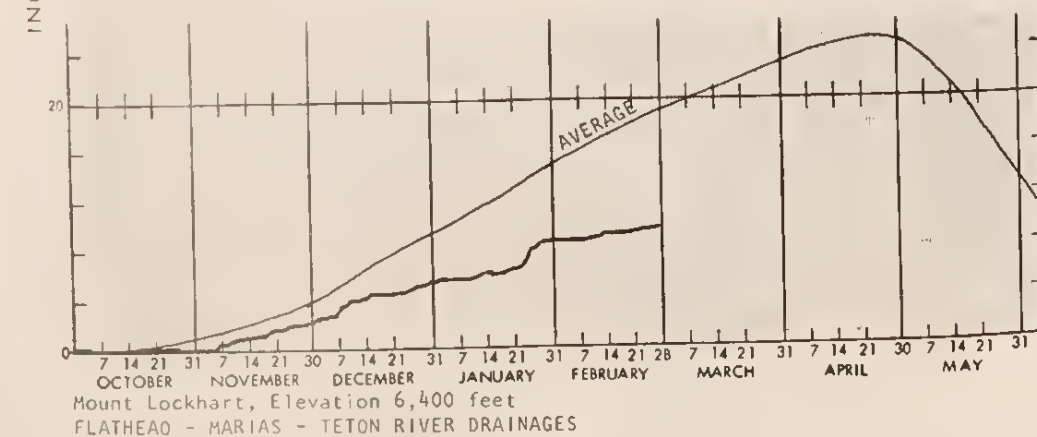
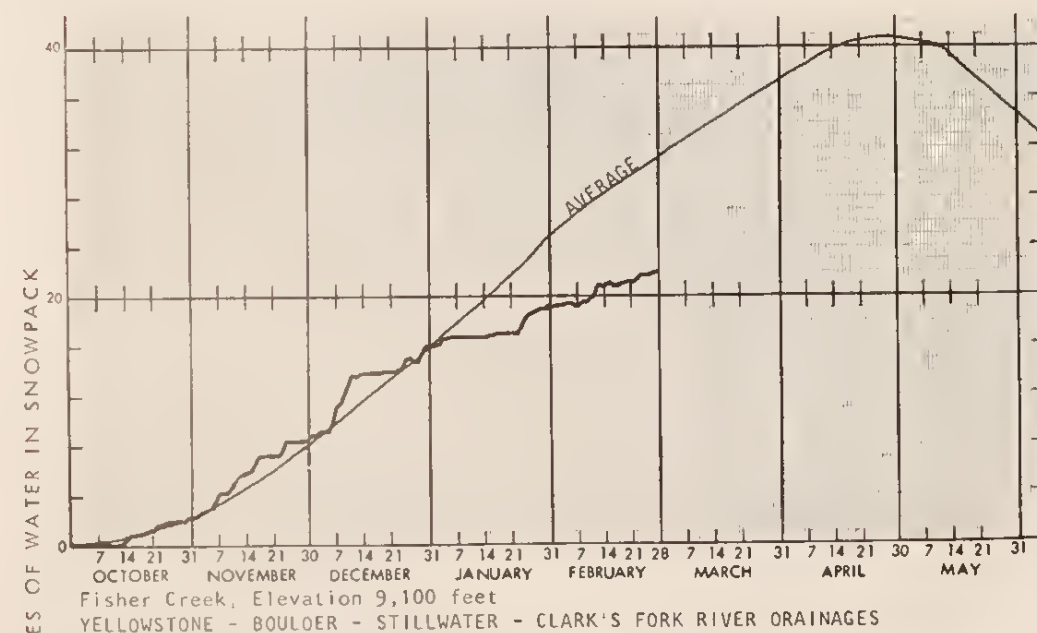
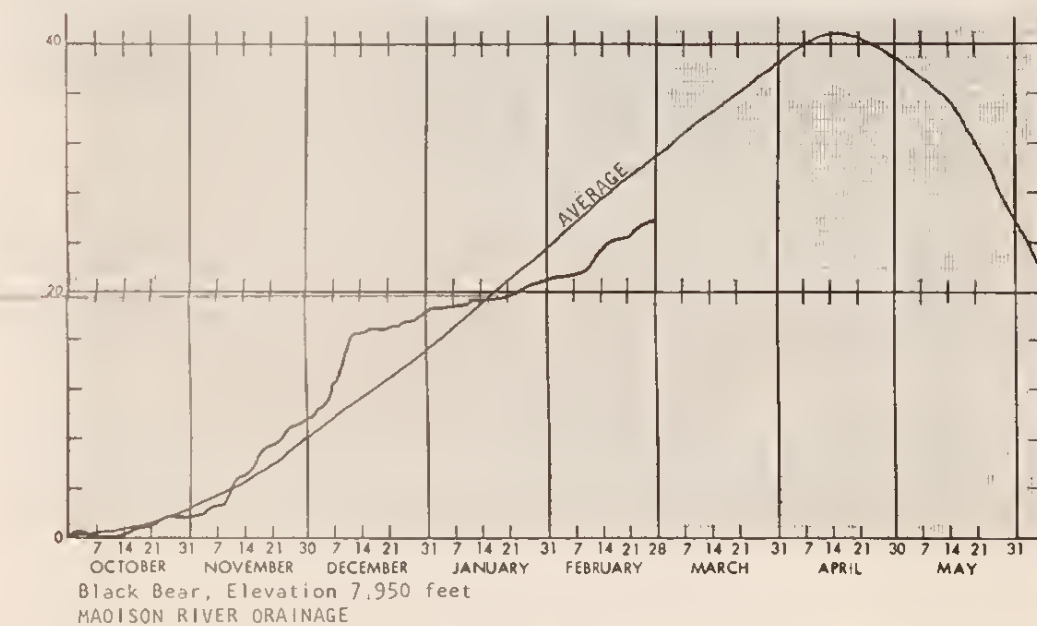
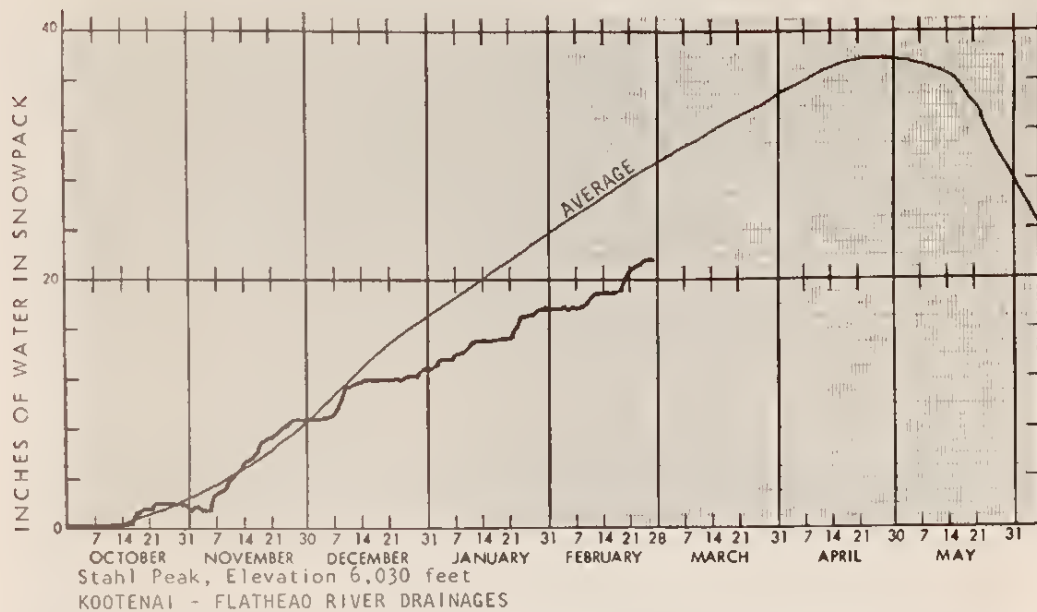
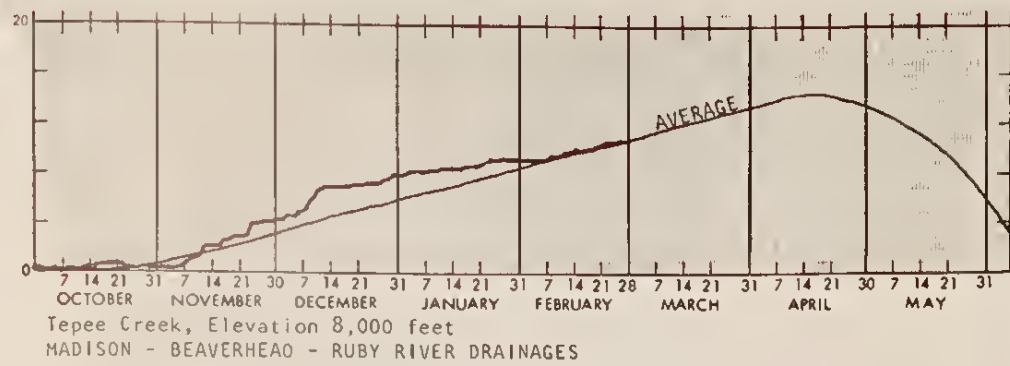
Updated forecasts will be issued soon after the April 1 snow surveys are completed.



Mountain streams are starting to lose their ice cover and will soon be ice free.



SNOW PILLOW DATA



SATELLITE SNOW COVER



MISSOURI RIVER BASIN
Above
Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 29, 1983	99.1	3940
December 20, 1983	100	3800
January 9, 1984	72	5720
January 31, 1984	78	5440
February 8, 1984	74	5630
February 27, 1984	100	3800



Shallow snowpacks expose many obstacles not normally seen by winter travelers.



RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH February 29, 1984

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Koocanusa	5,748.2	2,789.0	2,190.0	---
Flathead	Hungry Horse	3,451.0	2,507.0	2,831.0	2,213.0
	Flathead Lake	1,791.0	787.4	752.8	934.1
	Camas (4)	45.2	29.5	31.2	12.3
	Mission Valley (8)	100.3	55.4	43.7	38.1
Clark Fork	Georgetown Lake	31.0	27.1	26.6	25.2
	Lower Willow Creek	4.9	3.3	1.6	1.6
	Nevada Creek	12.6	6.3	5.2	4.8
	Noxon Rapids	334.6	322.8	315.4	312.2
Bitterroot	Painted Rocks	31.7	---	---	16.1
	Como	34.9	23.9	---	12.6
MISSOURI					
Beaverhead	Lima	84.0	55.7	51.4	36.2
	Clark Canyon	257.2	171.8	165.0	141.2
Ruby	Ruby	38.8	27.8	27.6	26.7
Madison	Hebgen Lake	377.5	261.9	273.0	224.6
	Ennis Lake	41.0	31.2	30.7	35.7
Gallatin	Middle Creek	8.0	3.8	3.8	3.6
Missouri	Canyon Ferry	2,043.0	1,647.0	1,691.0	1,561.0
	Hauser & Helena	61.9	63.0	63.0	60.1
	Helena Valley	10.4	---	---	---
	Lake Helena	10.4	10.9	10.9	9.9
	Holter Lake	81.9	79.6	81.0	63.6
	Fort Peck Lake	18,910.0	15,900.0	15,640.0	14,830.0
Smith	Smith River	10.6	9.6	8.6	6.9
	Newlan Creek	12.4	8.6	8.7	9.2
Musselshell	Bair	7.0	3.2	5.2	4.7
	Martinsdale	23.1	14.2	18.3	9.5
	Deadman's Basin	72.2	---	63.1	46.3
Sun	Gibson	99.1	54.7	61.8	43.9
	Willow Creek	32.2	24.3	24.2	20.1
	Pishkun	32.0	19.4	19.9	17.8
Marias	Lower Two Medicine	11.9	---	---	7.0
	Four Horns	19.2	---	---	12.5
	Swift	30.0	13.1	14.9	15.2
	Lake Frances	111.9	47.2	85.1	70.1
Milk	Elwell (Tiber)	1,347.0	695.0	693.7	542.1
	Beaver Creek	3.5	3.1	3.1	1.7
	Fresno	127.2	24.6	13.2	58.5
	Nelson	66.8	39.1	44.4	38.7
HUDSON BAY					
St. Mary's	Lake Sherburne	64.3	35.2	35.8	21.9
YELLOWSTONE					
Stillwater	Mystic Lake	21.0	4.4	3.9	7.3
Clark's Fork	Cooney	27.4	17.0	17.6	14.6
Tongue	Tongue River	68.0	15.2	18.4	34.4
Bighorn	Bighorn Lake	1,356.0	839.0	962.6	590.4

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES

Canada

- Department of the Environment
- Atmospheric Environment Service
- Water Management Service
- British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section
- Alberta Environment
- Technical Services Division

Federal

- Department of the Army - Corps of Engineers
- Department of Agriculture - Forest Service
- Soil Conservation Service
- Department of Commerce - National Environmental Satellite Service
- National Weather Service
- Department of Interior - Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation
- Department of Energy - Bonneville Power Administration

STATE AGENCIES

- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

PRIVATE ORGANIZATIONS

- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company
- Pondera County Canal & Reservoir Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.